SHCHERBAKOV, G.P.; SOKOL'SKAYA, I.L.

Experimental study of the energy distribution of field emission electrons from CdS single crystals. Fiz.tver.tela 4 no.12:3526-3536 D '62. (MIRA 15:12)

1. Leningradskiy gosudarstvennyy universitet.
(Field emission) (Cadmium sulfide crystals)

S/109/62/007/009/003/018
D409/D301

AUTHORS: Sokol'skaya, I.L., and Fursey, G.N.

TITLE: Influence of various coatings on the character of effects preceding the disintegration of tungsten emitters by field-emission current pulses of high density

PERIODICAL: Radiotekhnika i elektronika, no. 9, v. 7, 1962, 1484 - 1494

TEXT: The changes were investigated which take place in the pre-arc period, on using various emitter coatings; this permits varying the work function, the field strength at the emitter surface, the shape of the potential barrier and the space-charge distribution. It was found that the space charge has a greater effect in the case of coatings which lower the work function (barium). The experimental apparatus used, was similar to that described in detail in the references, but it contained, in addition, an evaporator. The pulse duration was 2-4 microseconds. The accuracy of the experimental method was slightly higher than that of an earlier investigation by

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Influence of various coatings ...

G.N. Fursey; (the voltage could be measured to an accuracy of 10 volt.) It was found that the relative current-rise decreases with increasing thickness of the coating. The appearance of a bright ring surrounding the emission pattern, served as an indication that the pre-arc state was reached. A figure shows the emission patterns for two different barium-coatings of the tungsten emitter. Other figures represent the process of migration and evaporation of a thin Ba-layer, deposited on the cold tungsten emitter. The current-voltage characteristics exhibit a strong deviation towards lower current-densities, and this all the more so, the lesser the work function. This can be ascribed to the influence of the space charge. The above result is in good agreement with that of I.P. Barbour et al. (see references). It is concluded that the relative current-rise decreases with the work function; this is due to the influence of the space charge and to the temperature effect of the thermo-autoelectronic emission. Emitters, activated by a Bamonolayer, are stable up to critical current-densities. The pre-arc period of an emitter, coated with various layers which reduce the work function, is characterized by the appearance of bright rings in the emission pattern. This is also the case with tungsten-carbide emitters, but

S/057/62/032/003/019/019
B119/B104

AUTHORS: Zubenko, Yu. V., and Sokol'skaya, I. L.

TITLE: Work function of tungsten carbide

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 32, no. 3, 1962, 378 - 380

TEXT: The authors determined the work function φ for W and W_2C by the Richardson method. The emission from a 0.112 mm thick, 70 cm long tungsten wire was measured at an anode voltage of 200 volts in the vacuum at ... $1 - 2.10^{-9}$ mm Hg. The temperature of the central part of the wire was determined from the current passing through it. The tungsten wire was then treated with naphthalene vapor at 1600°K until a 20 μ thick carbide layer had formed. Subsequently, the emission was again measured. The temperature was determined by means of an optical pyrometer and from the power input. With pure W the work function $\varphi_W = 4.54 \pm 0.07$ electron-volts, the constant $A = 53 \frac{a}{cm^2 \cdot deg^2}$. With W_2C $\varphi_{W_2C} = 4.58 \pm 0.08$, $A = 190 \frac{a}{cm^2 \cdot deg^2}$.

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The authors thank A. N. Gorlov, director of the high-temperature laboratory of VNIIM and his senior scientific collaborator E. A. Lapina for making available the temperature measuring instruments. There are 2 figures and 17 references: 4 Soviet and 13 non-Soviet. The four most recent references to English-language publications read as follows: C. N. Horating. J. Appl. Phys., 12, 1, 95, 1947, Brattain s. Becker. Phys. Rev., 43, 428, 1933; R. O. Jenkins a. W. G. Trodden. British. J. Appl. Phys., 10, 1, 1959; D. L. Colwter, R. C. Haddad. Appl. Phys., 22, 1, 70, 1951.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova, Fizicheskiy fakul'tet (Leningrad State University imeni A. A. Zhdanov, Department of Physics)

SUBMITTED: September 27, 1961

S/109/62/007/009/002/018
D409/D301

AUTHORS: Sokol'skaya, I.L., and Fursey, G.N.

TITLE: Study of effects, preceding the disintegration of tungsten emitters by field-emission current pulses of high density

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 9, 1962, 1474 - 1483

TEXT: The field emission of tungsten emitters, with current densities of the order of 10^8 a/cm^2, was studied by the pulse method (the pulse duration ranging from 1-4 microseconds). The experimental apparatus is shown schematically. A rectangular pulse of negative polarity was applied to the cathode of the apparatus. The corresponding current-pulse was drawn at the collector. Both pulses were recorded by means of the electron-beam oscillograph OK-17M (OK-17M). The oscillograph was simultaneously used for photographing the emission patterns. All the experiments were carried out in a vacuum (of the order of 10-9 mm Hg). The design of the apparatus permitted measuring the current from various parts of the emitter

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S/109/62/007/009/002/018
D409/D301

Study of effects, preceding ...

surface; It was found that all the processes which take place in the pre-arc (pre-breakdown) period, are reversible and reproducible (up to the critical current-density), and that the disintegration of the emitter takes place during a time interval which is much shorter than 1 microsecond. A figure shows typical oscillograms of the spontaneous current increase. Another figure shows the bright rings, surrounding the emission pattern. It is concluded that the dependence of the process on the duration of the field-emission current, the magnitude of the latter, and the considerable lag which characterizes all the effects, are proof of the thermal nature of the investigated phenomena. The reproducibility of the results stresses the strict regularity and reversibility of the processes. The emitter is very stable and remains so even under conditions close to critical current-densities, (provided that the voltage is stable). The pre-arc period is characterized by a considerable heating-up of the emitter; the temperature at the beginning of the saturation period is about 1500-2000°K. The current at the bright ring has lag which disappears with a higher initial temperature and current density. The temperature effect at the ring is much greater than at the center. The breakdown which occurs at the critical

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current-density, takes place very suddenly and is of very short duration; the time in which the arc develops is immeasurably short as compared to the pulse duration. The critical current-densities can be somewhat increased by reducing the pulse duration. There are 12 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova (Leningrad State University im. A.A. Zhdanov)

SUBMITTED: March 19, 1962

Card 3/3

S/109/62/007/009/001/018
D409/D301

AUTHORS: Zubenko, Yu.V., and Sokol'skaya, I.L.

TITLE: Field emission of Au-Ba layers

PERIODICAL: Radiotekhnika i elektronika, v. 7, no. 9, 1962, 1467 - 1473

TEXT: The compound $BaAu_5$ was investigated by the methods of field emission microscopy (in Müller's electron projector). The $BaAu_5$ layers of stoichiometric composition were obtained by vacuum evaporation of the original materials, the layers being deposited on a tungsten emitter point. The emission pattern of the layers varies with layer thickness. The work function of the obtained layers was 3.3 ev. The tungsten emitter-point was heated, by application of a direct field (minus at the cathode) to $\sim 900^{\circ}K$. This led to a basic change in the emission pattern, accompanied by a considerable drop in the field-emission current. Heating in a reversed field (minus at the anode), led to a considerable increase in the current. A figure shows the emission patterns of the layers, cooled down from

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Field emission of Au-Ba layers

900°K to room temperature. Another figure shows the emission patterns after heating in the reversed field. The current-voltage characteristics and the work function were determined for each of the described states of the layers (various thickness and treatment of the layers). On heating in the direct field, the work function of the layers approaches that of the tungsten base; this tendency is more pronounced in the thin layers, and less in the thick layers. Heating in an electric field leads to polarization of the layers, involving dipole rotation; it can be assumed that the $BaAu_5$ compound has considerable polarizability and possibly a constant dipole moment. The presence of dipoles in the layer is also indicated by the way in which the temperature affects the transition from one state to another. The observed changes in the work function and the different behavior of layers of various thickness, can best be explained by assuming that the Ba-Au layer is a semi-conductor, its conductivity depending on the structure, which greatly varies with the re-orientation of dipoles in the external electric field. Together with the conductivity, the Debye-Hückel radius x_0 changes. In

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S/109/62/007/009/001/018
D409/D301

Field emission of Au-Ba layers

accordance with the above assumption, the treatment of the Ba-Au layers in the direct field lowers the conductivity and increases x_o. The above hypothesis can be experimentally tested. There are 5 figures and 1 table.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova (Leningrad State University im. A.A. Zhdanov)

SUBMITTED: March 19, 1962

Card 3/3

43138
S/181/62/004/011/042/049
B108/B186

AUTHOR: Sokol'skaya, I. L.

TITLE: Temperature dependence of the thermionic emission from CdS

PERIODICAL: Fizika tverdogo tela, v. 4, no. 11, 1962, 3332-3334

TEXT: The temperature of a CdS thermionic cathode can be determined from the shift of the optical absorption edge which lies in the visual range of the spectrum. In the range 120-650°K the shift of the absorption edge is proportional to the absolute temperature by a coefficient of $-5.5 \cdot 10^{-4}$ ev/°K, which corresponds to a shift of 1.1 Å/°K towards longer waves with rising temperatures. Such measurements were made between room temperature and some 600°K at 10^{-9} mm Hg. The position of the absorption edge was determined by simply rotating the monochromator prism. The CdS crystal, which was attached to a tungsten support, was heated by passing a current through the latter. This made it possible to determine the temperature of the specimen with an error of not over 5°K. The thermionic dark current recorded up to 500°K (at higher temperatures the crystals undergo irreversible changes) increases with temperature according to a

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Temperature dependence of ...

power law. The voltampere characteristics indicate that thermionic emission sets in above 100°C. Below this level the autoemissive current is proportional to the carrier concentration. There are 2 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: July 6, 1962

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MILESHKINA, N.V.; SOKOL'SKAYA, I.L.

Electron energy distribution in field emission from germanium films on tungsten. Fiz. tver tela 5 no.9:2501-2508 S '63. (MIRA 16:10)

1. Leningradskiy gosudarstvennyy universitet.

S/0181/64/006/005/1439/1448

ACCESSION NR: AP4034926

AUTHORS: Sokol'skaya, I. L.; Noymann, Kh.; Kloze, E.

TITLE: A study of surface migration of molybdenum by the method of field emission

SOURCE: Fizika tverdogo tela, v. 6, no. 5, 1964, 1439-1448

TOPIC TAGS: field emission, surface migration, molybdenum, autoelectronic current, activation energy

ABSTRACT: The authors used the method discussed by I. L. Sokol'skaya (ZhTF, 26, 1177, 1956; Izv. AN SSSR, 20, 1151, 1956). They determined the activation energy for the surface migration of Mo atoms along the natural lattice from a study of the temperature dependence of the time behavior and of the autoelectronic current on heating a point of monocrystalline Mo in a strong electrical field. The activation energy was found to be 2.00 ± 0.15 ev. Without the electrical field, the migration energy proved to be 2.86 ± 0.15 ev. The authors show that the difference between these values cannot be ascribed to any decrease in binding energy between surface atoms in a strong field. The effect of the field on activation energy is found to be negligible. The coefficient of surface tension, roughly computed, is 2600 dynes/cm. When the crystal point was heated in a field of positive polarity (at

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ACCESSION NR: AP4034926

the very end of the rearrangement process on the {001} faces) emission became very marked, increasing with time during constant anode potential. The increase in current, accompanying intense illumination in the (001) zone, frequently led to destruction of the point. This phenomenon did not appear during heating at the opposite polarity, which leads to the conclusion that it is due to the adsorption of active gases, which separate from the screen through electron bombardment and orient themselves on the surface because of the strong field. Orig. art. has: 11 figures and 1 table.

ASSOCIATION: Leningradskiy gosudarstvenny*y universitet (Leningrad State University)

SUBMITTED: 28Nov63 ENCL: 00

SUB CODE: MM, EC NO REF SOV: 002 OTHER: 020

Card 2/2

ACCESSION NR: AP4039663 S/0181/64/ 006/006/1744/1749

AUTHORS: Noymann, Kh.; Kloze, E.; Sokol'skaya, I. L.

TITLE: Study of diffusion processes in rhenium with the aid of a field emission microscope

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1744-1749

TOPIC TAGS: diffusion process, rhenium, field emission microscope, activation energy, tungsten, thermal conductivity, body centered lattice, face centered lattice

ABSTRACT: The process of the change of form of monocrystalline points in rhenium under the influence high temperature and strong field was investigated with the aid of a field emission microscope. The method used for measuring the activation energy of this process was described by I. L. Sokol'skaya, Kh. Noymann, and E. Kloze (FTT 6, 1439, 1964). The rhenium emitter prepared by the method described by G. N. Fursey (Avtoref. Diss. LGU, 1963) was welded to a tungsten loop from a wire 0.112 mm in diameter 50 mm long. The measurements were taken in a temperature range of 1200-1800K. The residual pressure in the apparatus was 10^{-10} mm Hg. The value for the energy of activation in the presence of a

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ACCESSION NR: AP4039663

field was 1.5 ± 0.15 ev, while the energy of activation in the absence of field had the values of 1.5 ± 0.15 ev and 5.3 ± 0.5 ev. Orig. art. has: 2 sets of photographs and 4 figures.

ASSOCIATION: Leningradskiy gosudarstvenny*y universitet (Leningrad State University)

SUBMITTED: 03Jan64 ENCL: 00

SUB CODE: SS NO REF SOV: 003 OTHER: 027

Card: 2/2

ACCESSION NR: AP4039670 S/0181/64/006/006/1786/1798

AUTHORS: Sokol'skaya, I. L.; Mileshkina, N. V.

TITLE: Autoelectron emission and surface migration of germanium on tungsten

SOURCE: Fizika tverdogo tela, v. 6, no. 6, 1964, 1786-1798

TOPIC TAGS: electron emissivity, surface activity, germanium, semiconductor, absorption layer/ M 95 galvanometer, U1 2 electrometric amplifier, A4 M2 cathode voltmeter

ABSTRACT: The germanium surface migration on tungsten was studied, leading to a determination of the activation energy of this process from the autoelectron current volt-ampere characteristics. The emissive properties of the resulting layer were examined. The germanium layers (their surface migration was studied under an autoelectron microscope with a residual gas pressure of $< 10^{-9}$ mm Hg) were obtained by evaporation from a tungsten helix coated with a layer of Aquadag or alundum. Germanium (n-type with a specific resistance of 33 ohm • cm) was embedded in the degassed evaporator and was aged. The nonpyrometric temperatures were measured from the current of a 0.112 mm tungsten wire loop of 70 mm circumference;

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ACCESSION NR: AP4039670

the autoelectron current at 10^{-5} - 10^{-9} amp was measured on an M-95 galvanometer, and at 10^{-9} - 10^{-11} amp on an U1-2 electrometric amplifier. The voltages were measured on a cathode voltmeter A4-M2. With the unidirectional sputtering of germanium onto the tungsten at room temperature a darkening of the emission picture from the source side was observed. Upon heating, the surface migration appeared as a boundary motion with a temperature-dependent speed. Two types of migrations were observed. They differed in the minimal amount of condensates necessary, the lowest temperature at which the boundary motion was discovered, the activation energy, and emissive properties of the layer obtained after the completion of migration. The low-temperature migration started at 350-380K when the sputtered amount of germanium was sufficiently large; the high-temperature migration started at 780-800K with smaller amounts of germanium. It was found that: 1) complete similarity was shown between the migration of germanium and hydrogen, oxygen, and nitrogen on tungsten, see R. Gomer and J. K. Hulm (J. Chem. Phys., 27, 1363, 1957), R. Gomer, R. Wortman, and R. Lundy (J. Chem. Phys., 26, 1147, 1957), and G. Ehrlich and F. G. Hudda (J. Chem. Phys., 35, 1421, 1961); 2) the activation energy for low-temperature migration averages $\bar{Q}$ = 0.24 ev or 5.5 kcal/mols, for high temperature Q was larger; 3) the low-temperature migration is linked with the motions of the physically absorbed atoms over the chemi-absorbed layer; 4) the high-temperature migration appears as a motion of atoms which have

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been absorbed in the tungsten; 5) layers obtained with high-temperature migration contained sections of pure tungsten which contributed to the emission; 6) layers obtained with low-temperature migration are monoatomic and have semiconductor properties. Orig. art. has: 1 table and 8 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: 10Jan64 ENCL: 00

SUB CODE: SS NO REF SOV: 005 OTHER: 008

Card 3/3

ACCESSION NR: AP4017608 S/0109/64/009/002/0357/0359

AUTHOR: Zubenko, Yu. V.; Shakirova, S. A.; Sokol'skaya, I. L.; Belyakov, Yu. I.

TITLE: Using an omegatron for investigating the composition of gases liberated by some vacuum coatings subjected to an electron bombardment

SOURCE: Radiotekhnika i elektronika, v. 9, no. 2, 1964, 357-359

TOPIC TAGS: mass spectrometer, omegatron mass spectrometer, electron bombardment, vacuum device residual gas, Pt liberated residual gas, tin oxide liberated residual gas, Ag liberated residual gas, aquadag liberated residual gas, willemite liberated residual gas

ABSTRACT: The results of an investigation of residual gases liberated by an electron bombardment of conductive coatings on glass, such as platinum, tin oxide, aquadag, silver paste, and willemite on tin-oxide film, are briefly

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ACCESSION NR: AP4017608

reported. Although a qualitative investigation of gases was the objective, some quantitative results were obtained at pressures exceeding 10^{-7} torr. A most-simply designed omegatron was built, after J. S. Wagener, et al. (J. Appl. Phys., 1957, 28, 9, 1027), with a 15 x 15 x 15-mm resonance chamber. The gases liberated from Pt were: CO, N_2 and CO_2; those liberated from other coatings were: CO, N_2, and to a lesser degree CO_2 and CH_4. The ion currents of principal atomic or molecular ions are tabulated. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: none

SUBMITTED: 18Jan63 DATE ACQ: 18Mar64 ENCL: 00

SUB CODE: PH, GE NO REF SOV: 001 OTHER: 005

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ACCESSION NR: AP4035705 S/0057/64/034/005/0911/0912

AUTHOR: Zubenko, Yu.V.; Sokol'skaya, I.L.; Fursey, G.N.

TITLE: Concerning some peculiarities of field emission at high current densities

SOURCE: Zhurnal tekhnicheskoy fiziki, v.34, no.5, 1964, 911-912, and illustration facing p.912.

TOPIC TAGS: electron field emission, thermal field emission, point cathode

ABSTRACT: The bright rings surround field emission photographs of tungsten single crystal points obtained by high current pulsed operation and ascribed by their discoverors to thermal field emission from the portion of the emitter just below the tip (I.K.Trolan, E.E.Martin and I.Barbour,Phys.Rev.91,1043,1953) have been recently observed with Ta, Re, and W_2C emitters by two of the present authors (I.L.Sokol'skaya and G.N.Fursey,Radiotekhnika i elektronika,7,1474,1484,1962), who advanced several different hypotheses to account for them. Now, however, the rings have been obtained on photographs made under steady operation at normal currents with tungsten emitters that have been coated with barium or thorium to reduce the work function, and it is no longer reasonable to doubt their thermal field emission origin. Identi-

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ACCESSION NR: AP4035705

cal rings were obtained with a pulsed emitter operated at high current density and with the same emitter coated, heated, and operated continuously at moderate current. The emission from the conical portion of the emitter below the spherical tip produces a ring because the approximately cylindrical field in this region magnifies in only one dimension, in contrast to the spherical field about the tip, which magnifies in two dimensions. The rings show both radial and azimuthal structure; this is ascribed to the alternation of regions of high and low work function, which naturally occurs on the conical portion of the emitter as well as on the tip. The rings are sometimes observed to overlie the outer portion of the field emission image of the spherical tip. This is ascribed to a crossing of the electron beams occasioned by the complex structure of the field in the transition region between the approximately spherical field about the tip and the approximately cylindrical field about the lower portion of the emitter. Five field emission photographs are reproduced, four of which show rings. Orig.art.has: 1 figure.

ASSOCIATION: Leningradskiy gosudarstvenny*y universitet im.A.A.Zhdanova (Leningrad State University)

SUBMITTED: 11Jul63 DATE ACQ: 20May64 ENCL: 00

SUB CODE: EC,NP NR REF SOV: 001 OTHER: 001

Card 2/2

L 52531-65 EWT(1)/EWT(m)/EWP(w)/EWP(i)/EWA(d)/T/EWP(t)/EEC(b)-2/EWP(b) -- Pi-4 IJP(c)
ACCESSION NR: AP5010709 JD/JG/GG UR/0181/65/007/004/1043/1050

AUTHOR: Mileshkina, N. V.; Sokol'skaya, I. L.

TITLE: Experimental study of energy spectrum and of emission properties of thin layers of germanium on tungsten

SOURCE: Fizika tverdogo tela, v. 7, no. 4, 1965, 1043-1050

TOPIC TAGS: energy spectrum, emission property, germanium layer, tungsten, field emission electron, thin film

ABSTRACT: This is a continuation of earlier work by the authors (FTT v. 5, 2501, 1963 and v. 6, 1786, 1964), devoted to the migration of germanium in tungsten and to the energy distribution of field-emission electrons from tungsten coated with germanium. The present investigation concerns thicker layers of germanium on tungsten and is aimed at a direct verification of some of the earlier conclusions. The results confirmed the assumption that some uncoated sections of tungsten remain between the (011) and (001) faces, and that the energy spectrum of field-emission electrons from a monoatomic layer of germanium on tungsten, obtained by "low-temperature" migration, consists of two groups of electrons, the lower-energy group

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L 52531-65

ACCESSION NR: AP5010709

being connected with the emission of electrons from the zone of valence bonds of the germanium layer. Sputtering of germanium on tungsten results in a decrease in the emission current by a maximum of 70 times. The emission current increases with increasing thickness of the germanium layer. The energy spectrum of "thick" layers of germanium consist of two groups of electrons, the energies in one group being higher than for the uncoated tungsten, due to the appearance of conduction electrons in the thicker layers. The energy distributions of the electrons from volume formations of germanium atoms on tungsten ("little collars" and crystallites) are entirely different, both in shape and in half-width, from the energy distributions of electrons from either uncoated tungsten or from germanium layers on tungsten. Orig. art. has: 6 figures.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet (Leningrad State University)

SUBMITTED: 24Sep64 ENCL: 00 SUB CODE: SS

NR REF SOV: 002 OTHER: 003

Card 2/2

L 9675-66 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACC NR: AP5027454 SOURCE CODE: UR/0181/65/007/011/3470/3472

AUTHOR: Shishkin, Yu. G.; Sokol'skaya, I. L.

ORG: Leningrad State University (Leningradskiy gosudarstvennyy universitet)

TITLE: Feasibility of producing a gold-barium semiconductor

SOURCE: Fizika tverdogo tela, v. 7, no. 11, 1965, 3470-3472

TOPIC TAGS: gold alloy, barium alloy, semiconductor research, semiconducting material

ABSTRACT: Of the three known compounds of barium with gold, Au_2Ba is the only one with a closed valence band, which makes it a possible prospect for use as a semiconductor. In a brief survey of the literature, the authors establish criteria for the existence of semiconductor properties in a substance and build a case for possible application of Au_2Ba as a semiconductor.

SUB CODE: 20/ SUBM DATE: 01Jul65/ ORIG REF: 007/ OTH REF: 007

Card 1/1

L 36343-66 EWT(m)/T/EWP(t)/ETI IJP(c) JW/JG/JD

ACC NR: AP6015796 SOURCE CODE: UR/0048/66/030/005/0901/0902

AUTHOR: Zubenko, Yu. V.; Sokol'skaya, I. L.

ORG: none

TITLE: Adsorption and surface diffusion of platinum on tungsten /Report, Twelfth All-Union Conference on the Physical Bases of Cathode Electronics held in Leningrad 22-26 October 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 5, 1966, 901-902 and inserts

TOPIC TAGS: tungsten, platinum, adsorption, metal surface, crystal surface, surface film, diffusion, activation energy, field emission

ABSTRACT: The adsorption and migration of platinum on a tungsten point have been observed with a field emission microscope. The apparatus and experimental technique have been described elsewhere by the authors (Izv. AN SSSR /page and volume reference not given/). Sufficient platinum was deposited from an electrically heated 99.9% pure wire to cover a portion of the (100) and (100) regions of the tungsten point with a monolayer. The temperature of the tungsten point during deposition was 300° K. Migration of the adatoms was observed at temperatures ranging from 650 to 1050° K, and from the temperature dependence of the migration rates the following activation ener-

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L 36343-66
ACC NR: AP6015796

gies were determined:

$$Q_{[100] \rightarrow [011]} = 0.5 \text{ eV}; \quad Q_{[011] -- [010]} = 0.8 \text{ eV}; \quad Q_{(111)} = 0.7 \text{ eV}.$$

Observations of migration in the presence of considerably more adsorbed platinum indicated that migration along a thin layer of adsorbed platinum takes place in the same way as along the pure tungsten surface; from this it is concluded that the interactions of an adatom with the substrate and with other adatoms are not greatly dissimilar. The heat of desorption was found to be 5.7 ± 0.3 eV, in good agreement with the 5.8 eV heat of sublimation. The field emission current decreased and the work function increased with increasing thickness of the adsorbed layer. The observation of K.Neubeck (Z. Naturforschung a, 11, 587 (1956)) of the formation of bright borders with an increase of the field emission current in the presence of large quantities of adsorbed platinum was confirmed. The activation energy of the border forming processes was 1.9 ± 0.2 eV. It is concluded that at temperatures above 1000° K there occurs a penetration of platinum into the tungsten, which leads to changes in the surface relief and the appearance of bright borders in the field emission photographs. Orig. art. has: 5 figures.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 002/ OTH REF: 001

Card 2/2

L 39937-66 EWT(m)/T/EWP(w)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6015455 (A) SOURCE CODE: UR/0181/66/008/005/1390/1393

AUTHOR: Mileshkina, N. V.; Sokol'skaya, I. L.; Kis, L. B.

ORG: Leningrad State University im. A. A. Zhdanov (Leningradskiy gosudarstvennyy universitet)

TITLE: Study of emission properties of germanium on various faces of a tungsten single crystal

SOURCE: Fizika tverdogo tela, v. 8, no. 5, 1966, 1390-1393

TOPIC TAGS: field emission microscope, tungsten, volt ampere characteristic, germanium, single crystal, electron emission

ABSTRACT: Emission current of Ge from the (111) face and the area between the (011) and (001) faces of a tungsten single crystal was measured in field emission microscope. Pressure amounted to $\sim 10^{-10}$ mm Hg. Results (after low and high temperature migration) are interpreted on the basis of emission photos and curves of volt-ampere and current-time characteristics. Semiconductor characteristics are observed even in a small section of the Ge layer on the (111) face for a discontinuous nature of the complete coating. With increasing degree of the coating and high temperature migration of Ge, a thickening of the Ge layer in the area of the (111) faces is observed. After high temperature migration of the Ge, a coating greater than a monolayer is ob-

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L 39937-66

ACC NR: AP6015455

served in the vicinity of the (111) face. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: 15Sep65/ ORIG REF: 002

Card 2/2

ACC NR: AP6005950 SOURCE CODE:

AUTHOR: Mileshkina, N. V.; Sokol'skaya, I. L.

ORG: Leningrad State University im. A. A. Zhdanov (Leningradskiy gosudarstvennyy universitet)

TITLE: Field emission of metals coated with nonmetallic layers

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3163-3166

TOPIC TAGS: field emission, adsorption, germanium semiconductor, tungsten

ABSTRACT: The paper reviews the results of the authors' previous work, which revealed distinctive properties of the adsorption of thin germanium films on tungsten, as determined by field emission methods, and discusses the views of other authors on this subject. It has been noted that after the emitter has been coated with a monatomic layer of germanium (a nonmetal), a second maximum appears in the region of low energies of the emitted electrons on the energy distribution curves. The origin of these maxima is discussed. The energy spectrum of tungsten coated with a monolayer of germanium shows two groups of electrons, and as the thickness of the Ge layer increases, the first maximum decreases, indicating an increase in the additional potential barrier. In the case of adsorption of a metal on another metal, however, the distribution function of the emitted electrons does not change with varying degree of coating, the emission current changes in complete conformity with the change in the

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ACC NR: AP6036950

work function of the surface, and the size and shape of the electron energy distribution function does not change with increasing thickness of the metal layer. It is thought that this systematic difference between metal and nonmetal substrates should not be due to a random relative distribution of the Fermi levels of the metal and split levels of the adsorbed atoms. In the authors' view, a major part should be played by the nature of the bonding between the adsorbed nonmetal atoms, which is substantially different than in the case of adsorbed metal atoms. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 28Jan66/ ORIG REF: 019/ OTH REF: 008

Card 2/2

SIGAL, L.A.: Prinimali uchastiye: ZUBRITSKAYA, T.P.; KNYSHEVA, G.I.; SOKOL'SKAYA, I.N.; TISLENKO, O.A.; GREKOVA, V.I.; KRYUCHKOVA, L.A.

Analyzing the method of isolating permeable horizons in a cross section of wells drilled in the central and southern parts of the West Siberian Plain and determining the nature of their saturation. Trudy SNIIGGIMS no.18:5-45 '61. (MIRA 16:7)
(West Siberian Plain--Oil well logging)

SOKOL'SKAYA, Kh. V.

Cand Geol-Min Sci - (diss) "Conditions of the accumulation of upper Visean coal measures in the area of the western continuation of the Donbass." Dnepropetrovsk, 1961. 21 pp; (Ministry of Higher and Secondary Specialist Education Ukrainian SSR, Dnepropetrovsk Order of Labor Red Banner Mining Inst imeni Artem); 180 copies; price not given; list of author's works on pp 20-21 (13 entries); (KL, 7-61 sup, 225)

Sokol'skaya, L. I.

USSR.

Convection in Molten Metals. L. I. Sokol'skaya. (*Izvestiya Akademii Nauk S.S.S.R., Otdeleniye Tekhnicheskikh Nauk*, 1949, (9), 1365–1371). Using stearine, the temperature distribution in the top and bottom of cast cylinders was studied. Owing to convection, the temperature of the top part of a casting was higher than that of the bottom. This was also confirmed by bleeding experimental grey iron castings and by measuring the temperature distribution in cylindrical steel castings. The importance of convection currents in the solidification of cast metals is discussed.—V. G.

SOKOL'SKAYA, L. I.

USSR/Metals - Castings, Solidification Feb 52

"Solidification Rate of the Metal Mass," L.I. Sokol'skaya, Engr ORGTYaZhMASh

"Litey Proizvod" No 2, pp 17-19

Discusses methods for detg solidification rate, stating that vol-surface ratio may characterize only solidification of geometrically similar castings, giving erroneous results in all other cases. Solidification process may be represented schematically by method of isotherms, taking into consideration presence of angles in casting and effect of convection. Analyzes process and concludes that solidification rate cannot be expressed by math formula.

207T88

USSR/Metallurgy - Castings, Processes Aug 52

"Mechanism of Metals Solidification," L. I. Sokol'skaya, Engr

"Litey Proizvod" No 8, pp 11-15

Studies 2 trends in solidification of metals: skin, gradually growing in direction opposite to heat dissipation, or simultaneous solidification in major vol of casting with formation of mixt of liquid and solid phases. Method of pouring metal out of ingot after beginning of solidification was used in expts with 3 metals: pure aluminum, Al-base alloy AL4 (8.5% Si, 0.17% Mg, 0.19% Mn, 0.3% Fe), and Mg-base alloy ML-5 (8.2% Al, 0.28% Mn, 0.5% Zn). Establishes that solidification trend is not only conditioned by temp range of solidification, but depends also on thermal properties of metal and mold. Introduces term "limit of pouring-out ability," i.e., time from beginning of crystn to moment when metal stops flowing out of ingot. This limit, expressed in percentage of total solidification period, was detd as 88% for pure Al, 22% for ML-5, and 8% for AL-4. Suggests use of limit as technological characteristic which determines solidification trend of metal and its fluidity, i.e., capability to be fed with liquid metal from head.

233T66

SOKOL'SKAYA, L. I.

233T66

SOKOL'SKAYA, L.I.

Determination of hydrogen in aluminum and magnesium alloys. L. I. Sokol'skaya. U.S.S.R. 104,076, Oct. 25, 1958. H in molten Al or Mg alloys is detd. by vacuum extn. by noting the vacuum reading and the results are calcd. by a formula.
M. H.

18(4) PHASE I BOOK EXPLOITATION SOV/2647

Sokol'skaya, Lidiya Iosifovna

Gazy v legkikh metallakh (Gases in Light Metals) Moscow, Metallurgizdat, 1959. 114 p. Errata slip inserted. 2,800 copies printed.

Reviewers: M. V. Sharov, Candidate of Technical Sciences, and B. T. Krysin, Engineer; Scientific Ed.: V. V. Krymov, Candidate of Technical Sciences; Ed.: V. V. Krymov; Ed. of Publishing House: L. M. El'kind; Tech. Ed.: A. I. Karasev.

PURPOSE: This book is intended for engineers, technicians, and scientific workers in factories and educational or research institutions.

COVERAGE: The book discusses problems dealing with the interaction of gases with light metals and methods of determining the presence of gases in aluminum and magnesium. The mechanism of the formation of gas defects in cast metals, the effect of gases on the properties of cast metals, sources of gases and means of preventing the occurrence of gas defects are also discussed. No personalities are mentioned. There are 78 references: 30 Soviet,

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19 English, and 29 German.

TABLE OF CONTENTS:

SARYCHEVA, T.G.; SOKOL'SKAYA, N.A.; MAKSIMOVA, S.V.; BEZNOSOVA, G.A.

Facies zonation of brachiopods in the Carboniferous seas of the Kuznetsk Basin. Paleont.zhur. no.4:58-69 '62.
(MIRA 16:1)

1. Paleontologicheskiy institut AN SSSR.
(Kuznetsk Basin--Brachiopoda, Fossil)

SOKOLSKAYA, N.P.

New species and a subspecies of the family Naididae (Oligochaeta) from brackish waters of Kamchatka and southern Sakhalin. Biul. MOIP. Otd. biol. 69 no.4:57-64 Jl-Ag '64.
(MIRA 17:11)

KHOKHLOV, I.I., kand.tekhn.nauk; SOKOL'SKAYA, N.K., nauchnyy sotrudnik

Centralized disinfection of cottonseed. Zashch. rast. ot vred. i bol. 6 no.3:21-23 Mr '61. (MIRA 15:6)
(Cottonseed--Disinfection)

SOKOL'SKAYA, N. L.

"The Relation of the Size of the Nervous System of Oligochaeta to Their Muscular Movements," Dok. AN, 67, No. 5, 1949. Mbr., Zoological Museum, Moscow Order Lenin State Univ. im. M. V. Lomonosov, -c1949-.

SOKOL'SKAYA, N.L.; LASTOCHKIN, D.A.

New species of oligochetes of the genus Peloscolex (fam. Tubificidae) from the Amur Basin. Zool.zhur. 32 no.3:409-412 My-Je '53. (MLRA 6:6)

1. Laboratoriya sapropelevykh otlozheniy Instituta lesa Akademii nauk SSSR. 2. Zoologicheskiy muzey Moskovskogo universiteta imeni M.V. Lomonosova. (Oligochaeta)

SOKOL'SKAYA, N.L.

Materials on Naididae (family Naididae, Oligochaeta) of the Maritime Territory. Sbor. trud. Zool. muz. MGU 8:47-77 '61. (MIRA 15:5)

(Maritime Territory—Naididae)

SOKOL'SKAYA, N.L.

Materials on freshwater Oligochaeta of the Amur basin (based on the collections of the joint Soviet-Chinese Amur expedition of 1957 and 1958). Sbor. trud. Zool. muz. MGU 8:79-101 '61. (MIRA 15:5)

(Amur Valley--Oligochaeta)

SOKOL'SKAYA, N.L.

Recent data on geographical distribution of the oligochaete Branchiura sowerbyi Bedd. and some data on the ecology of the species. Zool. zhur. 40 no.4:605-606 Ap '61. (MIRA 14:3)

1. Zoological Museum, State University of Moscow.
(Amur Valley--Oligochaeta)

SOKOL'SKAYA, N.L.

Materials on the fauna of fresh-water oligochaetes of Kamchatka. Biul. MOIP. Otd. biol. 66 no.1:54-68 Ja-F '61. (MIRA 14:3)
(KAMCHATKA—OLIGOCHAETA)

SOKOL'SKAYA, N.L.

New species of Naididae (Oligochaeta) from Lake Baikal. Zool. zhur. 41 no.5:660-665 My '62. (MIRA 15:6)

1. Zoological Museum of the State University of Moscow.
(Baikal, Lake--Naididae)

SOKOL'SKAYA, N.I.

A new species of the genus Limnodrilus Claparede (Tubificidae, Oligochaeta) from brackish lakes of southern Sakhalin. Zool. zhur. 43 no.7:1071-1074 '64. (MIRA 17:12)

1. Zoological Museum, Moscow State University.

SOKOL'SKAYA, N. P. Doc Cand Biol Sci -- (diss) "Materials on the neurohumoral regulation of secretion activity of stomach glands in dogs." Mos, 1957. 14 pp 20 cm. (Moscow Veterinary Academy of the Min of Agriculture USSR), 140 copies (KL, 21-57, 100)

Sokol'skaya, N.P.

USSR / Pharmacology, Toxicology, Analeptics U-3

Abs Jour : Referat Zh.-Biol., No 1, 1958, No 3381

Author : Sokol'skaya, N.P.

Inst : Not given

Title : The Effect of Caffeine and Nembutal on the Secretory Activity of Normal and Denervated Gastric Glands.

Orig Pub : Tr. Mosk. vet. akad., 1956, 18, 94-100.

Abstract : Experiments on dogs revealed that 0.5 - 1.5 ml of a 20% caffeine solution increased gastric secretion in response to various food stimuli by 70% during a 6-hour period. The acidity and digestive ability of the gastric juice were also increased. Following bilateral vagotomy, the administration of caffeine decreased gastric secretion and lowered its acidity and digestive capability. In a dog

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0.1-0.15 g resulted in a decrease in gastric secretion and acidity. The digestive ability of the gastric juice was almost unchanged. Following vagotomy, Nembutal caused a greater depression of gastric secretion and its digestive [illegible] parasympathetic innervation was severed, Nembutal caused an increase in gastric secretions. Thus, the nervous system stimulation by caffeine and depression by Nembutal lead respectively, to an increase and a decrease in the secretion of the gastric glands. After severance of the parasympathetic innervation, caffeine and Nembutal caused a decrease, and after severance of the sympathetic innervation, an increase in gastric secretion.

Card : 2/2

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USSR / Human and Animal Physiology (Normal and Pathological).
Digestion.

Abs Jour : Ref Zhur - Biologiya, No 13, 1958, No. 60430

Author : Sokol'skaya, N. P.
Inst : Moscow Veterinary Academy
Title : Secretory Activity of the Gastric Gland in Dogs After Its Complete Denervation

Orig Pub : Tr. Mosk. vet. akad., 1957, 20, 199-202

Abstract : In dogs with Pavlov's stomach and a Basov fistula, the complete removal of the spinal cord below the 5th - 6th cervical vertebra, and a subsequent severance of the vagus nerves after 40 days on the level of the thyroid cartilage, caused a "spontaneous" constant secretion of the gastric juice. One to two hours after feeding, the digestive strength and acidity of the juice remained the same independently of the type of food. The hunger period

Card 1/2

SOKOL'SKAYA, N.P.

Observation of the secretory fucntion of the stomach following disturbances of the integrity of the cerebral cortex. Trudy Inst.fiziol. AN Kazakh.SSR 2:102-105 '59. (MIRA 13:7)
(CEREBRAL CORTEX) (STOMACH--SECRETIONS)

POPOV, N.F.; SOKOL'SKAYA, N.P.

Secretory function of the gastric glands free of the effect of the nerve centers. Fiziol.zhur. 45 no.3:326-329 '59. (MIRA 12:11)

1. From the Department of Animal Physiology, Academy of Veterinary Medicine, Moscow.
(GASTRIC JUICE,
secretion, eff. of denervation (Rus))

MASSINO, S. V., prof; ZAVARSKAYA, I. P.; KORNBLYUM, O. I., kand. med. nauk; MITINSKAYA, L. A., kand. med. nauk; SOKOL'SKAYA, N. S., kand. med. nauk

Method for and evaluation of tuberculin tests in determining the infection of the population with tuberculosis. Probl. tub. 40 no.4:3-11 '62. (MIRA 15:6)

1. Iz otdela epidemiologii i organizatsii bor'by s tuberkulezom (zav. - prof. S. V. Massino) TSentral'nogo instituta tuberkuleza Ministerstva zdravookhraneniya SSSR (dir. - deystvitel'nyy chlen AMN prof. N. A. Shmelev)

(TUBERCULIN--TESTING) (TUBERCULOSIS)

SOKOL'SKAYA, N.S., kand.med.nauk

Epidemiological significance of domestic contact of adults with the open forms of pulmonary tuberculosis. Probl.tub. no.1: 14-19 '63. (MIRA 16:5)

1. Iz otdela epidemologii i organizatsii bor'by s tuberkulezom (zav.- prof. S.V.Massino), TSentral'nogo instituta tuberkuleza (direktor-deystvitel'nyy chlen AMN SSSR prof. N.A. Shmelev) Ministerstva zdravookhraneniya SSSR.
(TUBERCULOSIS)

ANINA-RADCHENKO, N., doktor med. nauk, prof.; SOKOL'SKAYA, V. [Sokol's'ka, V.], kand. med. nauk

Cigarette smoke. Nauka i zhyttia 12 no.12:38-39 D '62. (MIRA 16:8)

SOKOL'SKAYA, V. D.

PA 234T23

USSR/Chemistry - Rubber, Rubber Fillers 1 Sep 52

"The Influence of Rubber Fillers on the Coefficient of Static Friction," S. B. Ratner, V. D. Sokol'skaya, Sci Res Inst of Rubber Ind

"Dok Ak Nauk SSSR," Vol 86, No 1, pp 121-124

In the static friction of rubber on metals and plexiglass the consts A and μ_∞ in the formula $\mu = \mu_\infty + A/N$ change independently of one another. A changes with the amt of filler and μ_∞ with the backing used. The magnitude of the contact

234T23

forces, A, is dependent on the mol attraction and increases as the amt of filler (carbon black, SiO_2, graphite, chalk) is reduced. A is the same for a given rubber regardless of the surface (metals, plexiglass). Changing the amt or kind of filler has no effect on the min coeff of friction μ_∞, but using large quantities of filler such as graphite can lower it. In this case the filler begins to act as a lubricant. Presented by Acad P. A. Rebinder 11 Jul 52.

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SOKOL'SKAYA, V.D.

USSR/ Chemistry - Chemical technology

Card 1/1 Pub. 22 - 25/40

Authors : Ratner, S.B., and Sokol'skaya, V.D.

Title : Effect of rubber hardness on the static friction coefficient without lubrication

Periodical : Dok. AN SSSR 99/3, 431-434, Nov 21, 1954

Abstract : It was established that the static friction coefficient does not vary during the filling of the rubber provided the filler is within the limits of compatibility with the rubber, i.e., when all particles of the filler are coated with a film of the vulcanized rubber. Beyond these limits, when the filler particles become an interlayer between the rubber and the lining, the friction coefficient decreases. The effect of plasticizers on rubber friction was found to be analogous to that of the filler. When the plasticizer is within compatibility limits with the rubber (swells without sweating) it decreases the hardness and increases friction. When the plasticizer sweats it assumes the role of a lubricant and reduces the friction coefficient. Nine references: 8-USSR and 1-USA (1947-1954). Table; graphs.

Institution : Scientific Research Institute of Rubber Industry
Presented by : Academician V.A. Kargin, August 12, 1954

SOKOLOVSKAYA, V. P.

SOKOLOVSKAYA, V. P. -- "The Effect of the Basic Ingredients of Rubber on Its Static Friction against Metal." Moscow Inst of Fine Chemical Technology imeni M. V. Lomonosov. Moscow, 1955. (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Knizhnaya Letopis', No 1, 1956

Sokol'skaya, V. D.

USSR/Chemistry - Rubber

FD-1730

Card 1/1 : Pub. 50-6/18

Authors : Ratner, S. B., Sokol'skaya, V. D.

Title : The effect of ingredients of rubber on its static friction in sliding

Periodical : Khim. prom., No 1, 27-34, Jan-Feb 1955

Abstract : Describe the effects of the hardness of rubber, the fillers, plasticizers, degree of vulcanization, kind of crude rubber used, etc. on the frictional properties of the fabricated rubber. The data assembled and the treatment of the subject serve the purpose of establishing how the frictional properties can be regulated by appropriate compounding. Twenty six references; 14 USSR, all of them since 1940. Ten graphs, 6 tables

KUCHERSKIY, A.M.; SOKOL'SKAYA, V.D.

Grips for the tension test specimen of conveyor belts made from synthetic fibers. Kauch. i rez. 24 no.8:54-55 '65.
(MIRA 18:10)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.

SoKoL'SKdyA, V.P.

SOV/16-59-9-47/47

17 (0)

AUTHOR: Gimmel'farb, Ya.K.

TITLE: The Ukrainian Republican Scientific and Practical Conference on the Etiology, Laboratory Diagnosis, Epidemiology and Prophylaxis of Epidemic Hepatitis (Botkin's Disease)

PERIODICAL: Zhurnal mikrobiologii, epidemiologii i immunobiologii, 1959, Nr 9, pp 155-157 (USSR)

ABSTRACT: The Republican Conference on Epidemic Hepatitis was held in Odessa from 2 - 10 October 1958 and was attended by 500 per- sons, mainly practising epidemiologists from sanitary-epidemiolo- gical stations, representatives of all the Ukrainian institutes of epidemiology and microbiology and some of the medical insti- tutes. In addition, delegates attended from the Institutes of Virology and Infectious Diseases of the AMN, USSR, the Lenin- gradskiy institut eksperimental'noy meditsiny (Institute of Ex- perimental Medicine, Leningrad), the Leningradskiy sanitarno- gigiyenicheskiy meditsinskiy institut (Sanitary-Hygiene Medi- cal Institute, Leningrad), and also the Moscow, Minsk, Tashkent, Tbilisi, Gor'kiy, Chita, Ashkhabad and Khabarovsk Institutes of

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Epidemiology and Microbiology and Institutes of Vaccines and Sera. The Conference heard 42 papers, divided among 5 sections. Papers were presented on: the cultivation of the causative agent of endemic hepatitis in developing chick embryoes (N.I. Krivaya- Usherenko), in human embryonic hepatic tissue (M.A. Morozenko, Leningrad) and in explantated human embryonic tissue (M.M. Sosh- nikova and I.A. Karaseva, Tashkent. Ya. K. Gimmel'farb spoke on the complement fixation reaction with non-bacterial adsorbent for the specific diagnosis of Botkin's disease. Verifying observa- tions on this reaction were made by N.B. Proskuryakova and Ye.G. Fedulova of the Institut infektsionnykh bolezney (Institute of Infectious Diseases) of the AMN, USSR, by I.P. Shevchenko (Kiyev), N.M. Karapats (Leningrad), M.D. Aleynik (Gor'kiy), and K.N. Ste- panova (Ashkhabad). According to the Odessa Institute of Epi- demiology and Microbiology, this reaction can be used for detec- ting virus antigen in feces (Ye.V. Lychovskaya) and detecting a rise in the complement fixation antibody titor in patients (R.M.

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Seletskaya). N.V. Sergeyev and G.A. Sinayko (Moscow) spoke on the diagnostic value of determining the aldolase activity. K.G. Kapetanaki (Leningrad) spoke on the diagnostic value of deter- mining the proconvertin. Professor V.A. Bashenin (Leningrad), M.L. Yablokova (Moscow) and I.M. Gol'shteyn (Dnepropetrovsk) analysed the epidemiological features of Botkin's disease. V.P. Sokol'skaya (Odessa) and D.Kh. Fomina (Kiyev) spoke on the pa- renteral means of infection with Botkin's disease. V.A. Ba- shenin, L.A. Stankevich (Kiyev) and A.P. Levchenko (Poltava) pre- sented papers on the chances of air-droplet transmission of in- fection. Corresponding Member of the AMN, USSR, Professor N.I. Morozkin and A.P. Sokolovskaya (Kiyev) demonstrated the epidemio- logical importance of abortive and jaundiceless forms of Botkin's disease. Yu.V. Romashko (Khar'kov) and M.D. Aleykin (Gor'kiy) summarized the successful results of gamma-globulin treatment of persons who had been in contact with endemic hepatitis patients. The Conference agreed on the need for a map showing the epidemiolo- gical investigation of such patients in the USSR and for a mono- graph on the etiology and epidemiology of Botkin's disease.

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SOKOL'SKAYA, V.P., kand.med.nauk

Parenteral infection with Botkin's disease. Vrach.delo no.1:63-65 '60. (MIRA 13:6)

1. Virusologicheskaya laboratoriya (zav. - prof. Ya.K. Gimmel'farb) Odesskogo instituta epidemiologii i mikrobiologii.
(HEPATITIS, INFECTIOUS)

NOVIKOVSKIY, V.E., inzh.; SOKOL'SKAYA, V.V., inzh.

Use of synthetic materials to prevent water losses due to seepage from canals and reservoirs. Gidr. i mel. 13 no.4:22-29 Ap '61. (MIRA 14:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii im. A.N.Kostyakova.

(Seepage) (Irrigation canals and flumes)
(Reservoirs)

SOKOLSKAYA, Y . L., KLIMIN, A. Y . AND YERMOLAYEVA, T. Z.

(Physical Inst., Leningrad State Univ.)

"Field Emission from Cadmium Sulfide"

report submitted (but not presented by authors) at the Field Emission Symposium, University,of Chicago, 23-25 June 1958.

SoKoL'sKaya, E.V.

Fermentation of feed molasses by brewer's bottom yeasts. N. I. Serbinova and E. V. Sokol'skaya (All-Union Sci. Research Inst. Alc. Ind., Kiev). *Mikrobiologiya* 22, 695–703(1953).—The yeasts which ferment raffinose best are high-activity strains 776, N, P, B, and R of *Saccharomyces cerevisiae* from brewer's bottom yeasts. In molasses mash they are less active; like Eger wine yeast and strain 8 (cider yeast), they ferment 1/3 of raffinose and no melibiose. At 2–3% in autolyzate they ferment raffinose completely, but only partially if 10% sucrose is present; in this soln. they ferment 1/6 to 5/6 of melibiose. Low-activity strains are nearly or quite inert to melibiose, apparently because molasses (even with sucrose added) is not an adequate nutrient medium. Julian F. Smith

SOKOL'SKAYA, YE. V.

SERBINOVA, N.I.; SOKOL'SKAYA, Ye.V.

Bacteriophage of lactic acid bacilli of the Lactobacillus plantarum type. Mikrobiologiia 23 no.4:424-430 Jl-Ag '54. (MLRA 7:9)

1. Kiyevskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta spirtovoy promyshlennosti.

(LACTOBACILLUS,
plantarum, bacteriophage)
(BACTERIOPHAGE,
of Lactobacillus plantarum)

SOKOLSKAYA, Ye.V

4785. Conditions of breakdown of raffinose in molasses. N. I. Serbinova and E. V. Sokolskaia *Trud. Kievsk. Inst. spirt. Prom.*, 1955, No. 2, 97—107; *Referat. Zh. biol. Khim*, 1956, Abstr. No. 15945.—The reasons for the non-breakdown, in a medium of molasses, of melibiose formed by the partial hydrolysis of raffinose, were investigated. Melibiose is not broken down by wine-yeast because this does not contain melibiase. Bottom brewers' yeast grown in a complete malt medium forms an active melibiase. Such yeast used in large quantity (140 million cells 1 ml.) in a molasses extract can break down raffinose. The bottom yeast, when cultivated in a molasses medium, lost its melibiase activity. The breakdown of raffinose in molasses media was fairly successful with yeast autolysates in the fermenting medium. (Russian)

T. R. PARSONS.

YEGOROV, A.S.; VISHNEVSKAYA, G.L.; SOKOL'SKAYA, Ye.V.

Composition of alcoholic liquors in the purifying column.
Spirt. prom. 24 no.7:18-22 '58. (MIRA 11:11)
(Distillation apparatus)

VISHNEVSKAYA, G.L.; YEGOROV, A.S.; SOKOL'SKAYA, Ye.V.

Studying the process of purification in a three-column beer rectifying apparatus. Trudy UkrNIISP no.5:123-138 '59.

Nitrogen compounds in the products of alcohol rectification. (MIRA 16:11)
147-151

STABNIKOV, V.N.; YEGOROV, A.S.; VISNEVSKAYA, G.L.; SOKOL'SKAYA, Ye.V.

Composition of the ether-aldehyde fraction. Trudy UkrNIISP no.5:139-145 '59. (MIRA 16:11)

SOKOL'SKAYA, Ye.V.; YEGOROV, A.S.; VISNEVSKAYA, G.L.

Identification of ethers and aldehydes in alcohol and in the products of rectification. Report No.2. Trudy Ukr.NIISP no.8: 63-71 '63. (MIRA 17:3)

SOKOL'SKAYA, Ye.V.; VISNEVSKAYA, G.L.; YEGOROV, A.S.

Application of paper chromatography for the identification of esters and aldehydes. Report No.3. Trudy UkrNIISP no.9:38-44 '64. (MIRA 17:10)

SOKOL'SKAYA, Zh. (Taganrog)

Hello, doctor! Okhr.truda i sots.strakh. 5 no.11:10-11 N '62.
(MIRA 15:12)

(Taganrog—Steel industry—Hygienic aspects)

DRAKIN, Aleksey Ivanovich; SOKOL'SKAYA, Zhozefina Markovna, zhurnalist; POPOV, A.S., red.; ZAYTSEVA, L.A., tekhn. red.

[Organizer of mass production work] Organizator proizvodsvenno-massovoi raboty v profgruppe. Moskva, Profizdat, 1963. 43 p. (Bibliotechka profsoiuznogo aktivista, no.22(70)) (MIRA 17:3)

1. Predsedatel' zavodskogo komiteta profsoyuza Elektrostal'skogo zavoda tyazhelogo mashinostroyeniya, Podmoskov'ye (for Drakin).

NEVSKIY, Yevgenii Georgiyevich; NEFEDOV, S. , redaktor; SOKOL'SKAYA, Zh.M., redaktor izdatel'stva; KARASIK, N.P., tekhnicheskiy redaktor

[Mechanization of winter bundling of lumber at riparian lumber yards] Mekhanizatsiia zimnei splotki lesa na prirechnykh skladakh. Moskva, Goslesbumizdat, 1957. 49 p. (MLRA 10:6)
(Lumber--Transportation)

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(Communist Youth League) (Efficiency, Industrial)

SOKOL'SKIY, A.

Throwing dust in one's eyes. Fin.SSSR 37 no.4:75-76 Ap '63.
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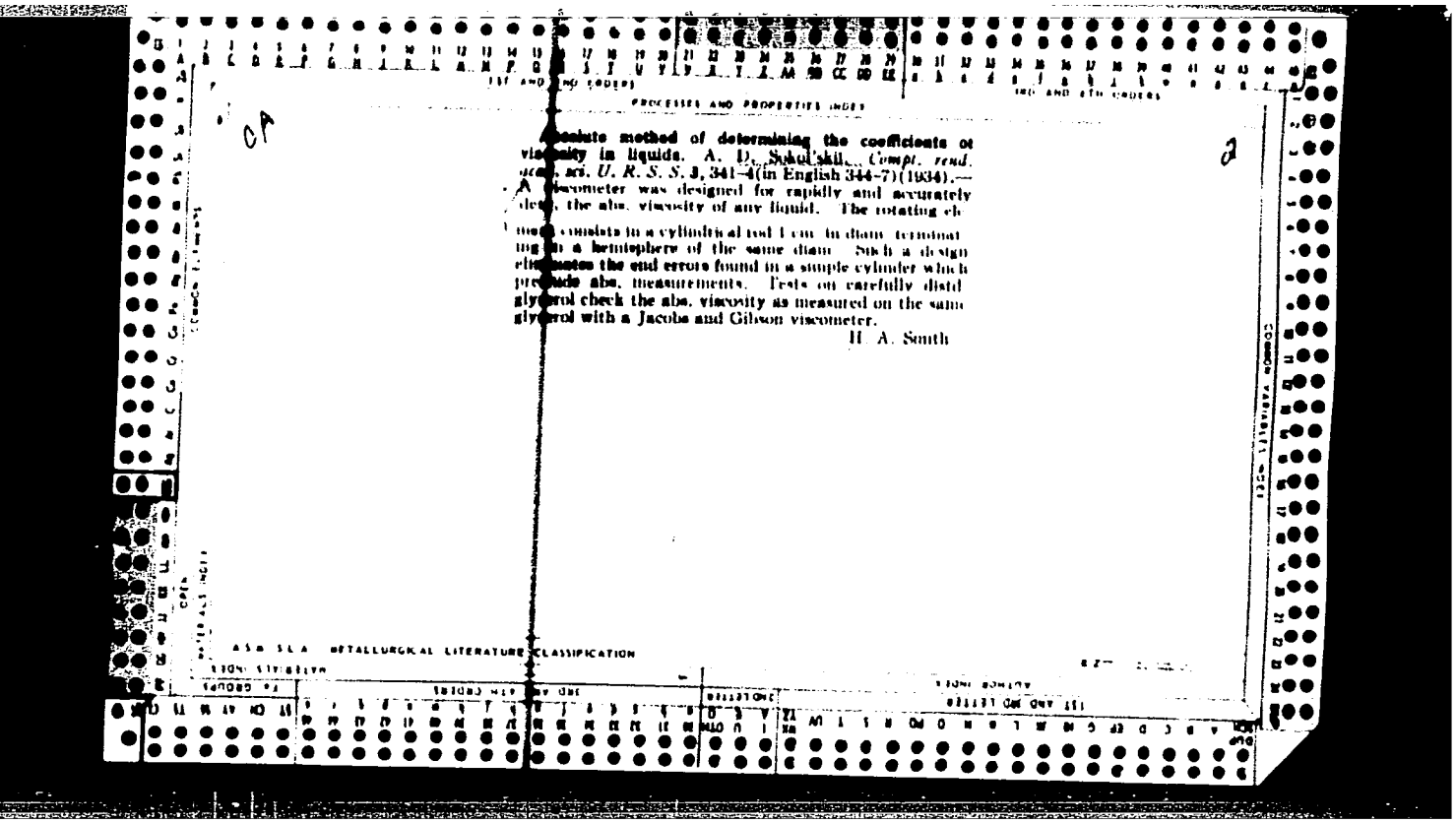
(Suggestion system) (Bonus system)

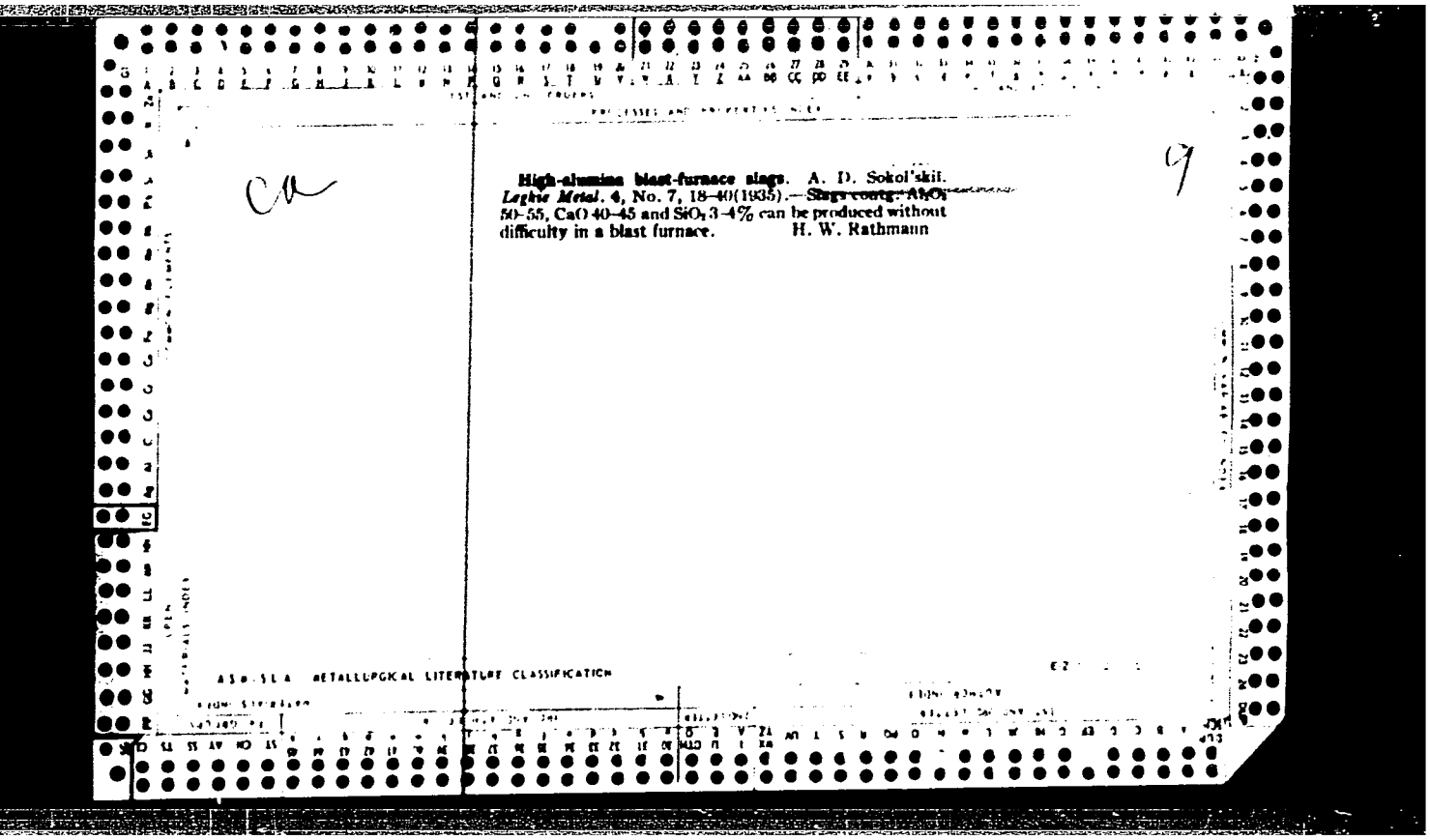


PROCESSES AND PROPERTIES INDEX

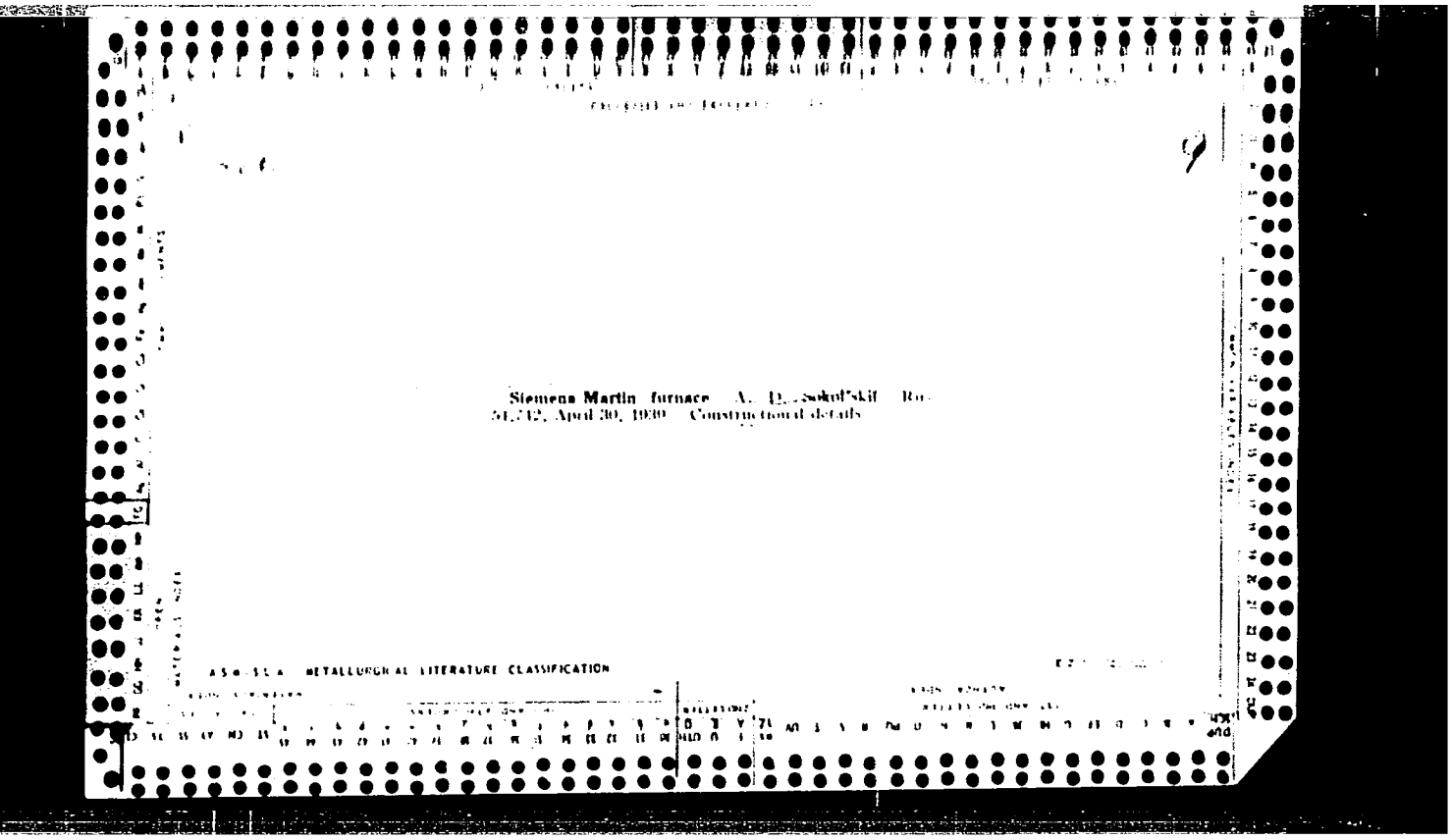
Absolute method of determining the coefficients of viscosity in liquids. A. D. Sokol'skii. *Compt. rend. acad. sci. U. R. S. S.* 3, 341–4 (in English 344–7) (1934).—A viscometer was designed for rapidly and accurately detg. the abs. viscosity of any liquid. The rotating el[ement] consists of a cylindrical rod 1 cm. in diam. terminating in a hemisphere of the same diam. Such a design eliminates the end errors found in a simple cylinder which precludes abs. measurements. Tests on carefully distd. glycerol check the abs. viscosity as measured on the same glycerol with a Jacobs and Gibson viscometer.

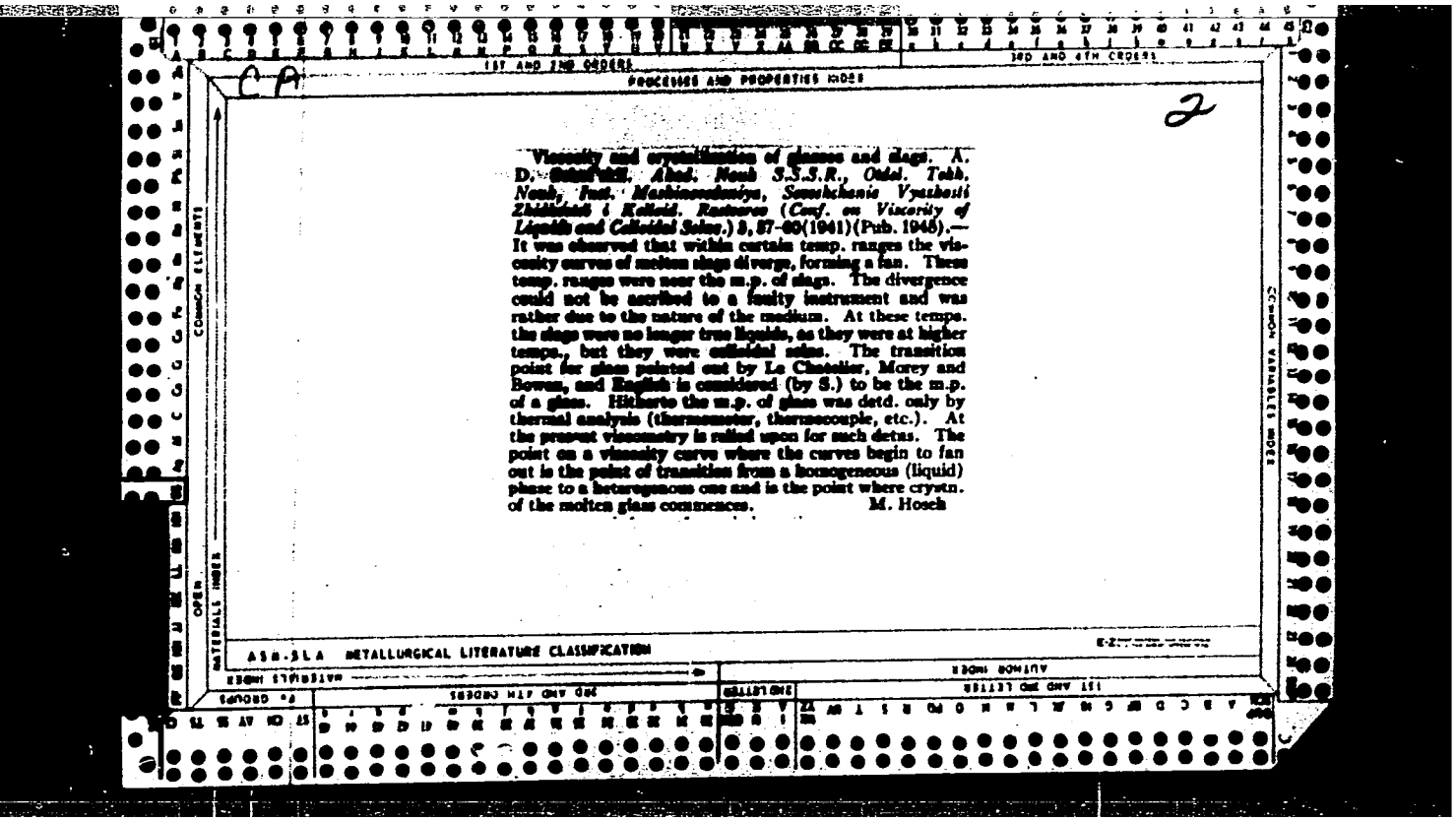
H. A. Smith

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



High-alumina blast-furnace slags. A. D. Sokol'skii. *Legkie Metal.* 4, No. 7, 18–40(1935).—Slags contg. Al_2O_3 50–55, CaO 40–45 and SiO_2 3–4% can be produced without difficulty in a blast furnace. H. W. Rathmann





1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

PROCESSES AND PROPERTIES INDEX

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Viscosity and crystallization of glasses and slags. A. D. Stanfield. *Akad. Nauk S.S.S.R., Otdel. Tekh. Nauk, Inst. Mashinovedeniya, Sovetskaia Vyazkosti Zhidkostei i Kolloid. Rastvorov* (*Conf. on Viscosity of Liquids and Colloidal Solns.*) 5, 87-90(1941)(Pub. 1945).— It was observed that within certain temp. ranges the viscosity curves of molten slags diverge, forming a fan. These temp. ranges were near the m.p. of slags. The divergence could not be ascribed to a faulty instrument and was rather due to the nature of the medium. At these tempa. the slags were no longer true liquids, as they were at higher tempa., but they were colloidal solns. The transition point for glass pointed out by Le Chatelier, Morey and Bowen, and English is considered (by S.) to be the m.p. of a glass. Hitherto the m.p. of glass was detd. only by thermal analysis (thermometer, thermocouple, etc.). At the present viscometry is relied upon for such detns. The point on a viscosity curve where the curves begin to fan out is the point of transition from a homogeneous (liquid) phase to a heterogeneous one and is the point where crystn. of the molten glass commences. M. Hosch

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

137-1957-12-23363 D

Translation from: Referativnyy zhurnal, Metallurgiya, 1957, Nr 12, p 74 (USSR)

AUTHOR: Sokol'skiy, A. D.

TITLE: The Determination of the Optimal Composition of Slag and Conditions for the Blast-furnace Smelting of Alumina-cement Cinders (Ustanovleniye optimal'nykh sostavov shlaka i usloviy domennoy plavki glinozemisto-tsementnykh klinkerov)

ABSTRACT: Bibliographic entry on the Author's dissertation for the degree of Candidate of Technical Sciences, presented to the Leningr. politekhn. in-t (Leningrad Polytechnical Institute), Sverdlovsk, 1957.

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1. Slags-Composition 2. Slags-Condition 3. Blast furnaces 4. Bibliography

Card 1/1

AL'TSHULER, B.A.; SALMANOV, G.D.; SOKOL'SKIY, A.D.; KARASEV, P.P.

Use of refractory concrete for lining cars and tunnel annealing lehrs. Ogneupory 22 no.7:326-329 '57. (MLRA 10:8)
(Refractory materials) (Concrete)

AL'TSHULER, B.A.; SALMANOV, G.D.; SOKOL'SKIY, A.D.; KARASEV, P.P.

Use of heat-resistant concrete for the construction of electric (vacuum) bell furnaces for annealing. Ogneupory 22 no.9:425-429 '57. (MIRA 10:11)

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(Electric furnaces) (Concrete)

SOKOL'SKIY, A.V.

Partial rendering harmless of nitrose gases in sulfuric acid manufacture. Khim.prom. no.2:90-92 Mr '54. (MLRA 7:6)

1. Nevskiy khimicheskiy zavod. (Sulfuric acid--Safety measures) (Nitrose)

[redacted], T. T.

Cigarette Manufacture and Trade

Permissible deviations in cigarette length must be made specific
Tabak No. 1, 1952
13

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SOKOL'SKIY, D.V.; BUKHMAN, A.V.

Promoter effect of Pt in the hydrogenation of cinnamic acid on a nickel-on-silica gel catalyst. Izv.AN Kazakh.SSR Ser.khim.no.2: 64-75 '48. (MIRA 9:7)
(Cinnamic acid) (Hydrogenation) (Catalysts, Platinum)

SOKOL'SKIY, D.V.; SHCHEGLOV, N.I.

Hydrogenation of nitrobenzene on Raney nickel with platinum as promoter. Izv.AN Kazakh.SSR Ser.khim.no.2:76-89 '48. (MLRA 9:7)
(Hydrogenation) (Benzene) (Catalysts, Nickel)

SOKOL'SKIY, D.V.

Promotion and poisoning of nickel catalysts in hydrogenation in the liquid phase. D. V. Sokol'skii. *Problemy Kinetiki i Kataliza, Akad. Nauk S.S.S.R. 6, Geterogennyi Kataliz* 156–70(1949).—A supported Ni catalyst was prepd. by satn. of SiO_2 gel with $Ni(NO_3)_2$ and reduction at 450–500°. It had 0.10–0.12 g. Ni and a specific surface area 25–300 sq. m. per g. It had low catalytic activity in hydrogenation of cinnamic acid (I) in EtOH soln. at 0–40°. Rh, Pd, Pt, Ru, and Os, in decreasing order of activity acted as promoters if added as salts to the solvent. The activation energies, *E*, with promoters present were, in kcal.: Pt 5.2–8.5; Rh 6–6.5; Os 6–12; Pd, with prior satn. with H_2, 8.2; Pd, without satn., 14–15. For the Pt- and Os-promoted catalysts, the order of reaction was zero; with the other 3, the order approached unity. The max. promotion was obtained at $1.2–3 \times 10^{19}$ atoms of promoter per g. of catalyst. From Kobozev's theory (*Zhur. Fiz. Khim.* 13, 1(1939); *Uchenye Zapiski Moskov. Gosudarst. Univ.* 36, No. 1, 13(1940)), this corresponded, for Pt, to active ensembles consisting of 7–8 Pt atoms, and approximated the no. of active centers on the surface of such nonpromoted Ni-SiO_2 gel catalyst that would become sufficiently active at room temp. Indications were that Ni:Pt participates in formation of active centers. Correlation of the promoter activity with the max. interat. distance of the promoter surface indicated that 3.5–3.6 A. is the most favorable spacing, and that the rate of the hydrogenation depends on the activation of H$_2$ mols. The

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O. V. Nikolaev

hexagonal Ru and Os are inactive, although they have interat. distances favorable for activation of the double bonds. With Pd black as a catalyst, all double bonds, but not triple bonds, could be hydrogenated, since the latter require optimum interat. distance of 3.2–3.3 A. During the initial period of hydrogenation of I on Pt-promoted, and of $PhNO_2$ on Pt-promoted Ni-SiO_2 gel at low temp., removal of adsorbed H was observed. The Pd- and Rh-promoted catalysts decreased in activity whereas the Ru-promoted catalysts increased in activity, if preactd. with H_2. Ni skeleton catalyst was prepd. by leaching 50% Ni-Al alloy with 20% NaOH; its specific surface was 20–30 sq. m. per g. With this catalyst at 0–25°, hydrogenation of $PhNO_2$, methyl(vinyl)(propyl)carbinol (II), styrene (III), dimethyl(ethynyl)carbinol (IV), oleic (V) and cinnamic acids, and maleic anhydride (VI) was of the 1st order for the 3 last compds., and zero order for the others. The 1st-order reactions had E = 9–11 kcal., the zero-order, 2–7.3 kcal. With Pt as a promoter on this catalyst, 3 types of behavior were observed. V and VI had a max. in the hydrogenation rate at 2.5×10^{-4} atoms of Pt per g. of catalyst; this corresponded to 4 atoms of Pt per active ensemble. Hydrogenation rates of IV and of 2-methyl-4-methoxy-2,3-butene showed little dependence on Pt content, but the reaction order changed first from zero to unity, and then back to zero with further increase of Pt content. For IV, the following E values were obtained, in kcal.: Ni skeleton catalyst 4.5, Pt black 4.5, $Ni-SiO_2$ gel 7.5–9.7 for the double bond and 6.5–10.6 for the triple bond. A 3rd group is formed by $PhNO_2$, II, III, and V. At low temp. (0°), the hydrogenation rate changed little with addn. of Pt. At higher temp., the activity in-

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creased first proportionally to the Pt content, but then approached some limiting value. At the limiting values, E was 6–11 kcal. for all 4 compds. In hydrogenation of I, the skeleton catalyst was relatively resistant to poisons such as $HgCl_2$, NaCN, As_2O_3, and Bz mercaptan (VII). NaCN and VII, added in increasing concns., blocked gradually the active centers; from poisoning by VII, it was calcd. that there were 0.6–0.8 × 10^{14} active centers per sq. cm. of the true surface. These two poisons had a temporary effect. Poisoning with $HgCl_2$ was much more lasting, but decreased the catalyst activity only by 45% at max., and was accompanied by a desorption of the most loosely adsorbed H_2 mols. Poisoning of a Pt-promoted skeleton catalyst with VII first eliminated selectively the high-activity, Pt-generated centers on a 1:1 ratio basis. With $HgCl_2$ 10 atoms were required to neutralize one active center. In hydrogenation of cinnamic aldehyde on Ni-skeleton catalyst, the addn. to the C:C bond was of 1st order, but to the C:O bond of zero order. Pd promoted the 1st, but slightly suppressed the 2nd, reaction. VII on the Pd-promoted catalyst poisoned the hydrogenation of the ethylene bond without affecting the rate of hydrogenation of the aldehyde bond. Thus the first is hydrogenated at the centers of higher adsorption potentials such as those generated by the promoters, whereas the aldehyde bond reacts with H_2 at normal low-activity centers. In similar hydrogenation of IV, the triple bond was hydrogenated at centers of medium activity. The mols. of VII each neutralized the effect of 5–6 mols. of Pd promoter. This is explained by a proximity of centers on which IV and H_2 are activated.

Andrew Dravnieks

A

Kinetics of the hydrogenation of dimethylethynylcarbinol on a skeleton nickel catalyst. D. V. Sokol'skii and L. A. Buvalkina (S. M. Kirov Kazakh State Univ., Alma-Ata). *Doklady Akad. Nauk S.S.S.R.* **73**, 803-6(1950).—Absorption of H_2, at 0°, by $Me_2(CH{\equiv}C)COH$ (I) in soln. in 90% alc., on H_2-satd. Raney Ni prepd. by leaching a Ni 30-Al 70% alloy, follows a zero-order rate law until % of the theoretical amt. of H_2 is absorbed; after that, the kinetic curve has a sharp bend and the rate falls linearly with time. The same kinetics is observed at 25°. Diffusion ceases to play a detg. role above a shaking speed of about 520/min. at 0° and 580/min. at 25°. The apparent activation energies, at shaking speeds of 210, 330, 400, 580, 700/min., are, resp., 2960, 3477, 3747, 4733, 4733 cal./mole. Threefold increase of the concn. of I merely raises the min. shaking speed corresponding to purely kinetic reaction, from 520 to 580/min. (at 0°); at equal shaking speeds, the rate of hydrogenation does not appreciably change with the concn. In the kinetic range, the rate of hydrogenation increases proportionally to the amt. of catalyst; the limiting speed of shaking corresponding to purely kinetic reaction remains unchanged on 3-fold variation of the amt. of catalyst. N. Thon

CA

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Potentiometric method of investigation of catalytic hydrogenation reactions. D. V. Sokol'skiĭ and V. A. Druz (S. M. Kirov Kazakh State Univ., Alma-Ata). *Doklady Akad. Nauk S.S.S.R.* 73, 949-52(1950).—The course of the liquid-phase hydrogenation in an electrolyte soln. on a metallic catalyst is followed by measurements of the e.m.f. E between the catalyst-electrolyte electrode and a 0.1 N calomel half-cell. In the hydrogenation of $Me_2(CH_2C)COH$ at room temp. on a H_2-satd. Raney Ni catalyst, in 0.1 N NaOH, the initial E = 1080 mv. falls, in the very beginning of the reaction, to 960 mv., and remains const. until the triple bond is completely satd. With beginning hydrogenation of the double bond, E rises by 30 mv. and remains const. as long as there is enough double bond left in the reaction mixt.; at the final stages of the satn. of the double bond, E rises slowly until, at the end of the hydrogenation, it reaches the equil. value of 1080 mv. Thus, the variation of E indicates very accurately the point of transition from the triple to the double bond, owing to the lower absorption of H_2 in the presence of the triple-bonded compd. Promotion of the Ni catalyst with Pd, 0.005–0.06 g./2 g. original Ni 50–Al 50% alloy, whereas it does increase very substantially the rate of absorption of H_2, changes E only insignificantly. Poisoning of the promoted catalyst with small amts. of $PhCH_2SH$ lowers the rate of the reaction, but does not affect E; larger amts. of the poison decrease the rate still further, but cause a rise of E at the point of inflection of the curve of the rate of reaction. Thus, the poisoning of the promoted catalyst proceeds in 2 stages; in the 1st stage it affects the activation centers of H_2, in the 2nd, the activation centers of the multiple bond. On the unpromoted catalyst, small amts. of $PhCH_2SH$ raise E from 980 to 990 mv., corresponding to poisoning of the triple-bond centers; with larger amts., E remains at 990 mv., while the rate of hydrogenation continues to fall, i.e., poisoning affects the activation centers of H_2. With still higher amts. of the poison, E increases anew, i.e. there is renewed poisoning of the triple-bond centers.

N. Thon